Penetration	AASHTO T 49
Ductility	AASHTO T 51
Solubility	AASHTO T 44
Ash	AASHTO T 111

D. Materials Warranty

General Provisions 101 through 150.

Section 824—Cationic Asphalt Emulsion

824.1 General Description

This section includes the requirements for cationic asphalt emulsions.

824.1.01 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

AASHTO T 59

GDT 44

824.2 Materials

824.2.01 Cationic Asphalt Emulsion

A. Requirements

1. Use a homogenous emulsion. After thorough mixing, the emulsion cannot show signs of separation within 30 days.
2. Use cationic emulsion grades that meet the requirements in Table 1 (metric).

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Testing emulsified asphalts (with the following exception): Frictional value	AASHTO T 59 GDT 44

D. Materials Warranty

General Provisions 101 through 150.

Table 1—Requirements for Cationic Emulsified Asphalt (Notes)

1. The Engineer may waive the settlement test requirement if the emulsified asphalt is used in less than 5 days. However, the Department may still require that the settlement test be run from the time the sample is received until it is used.
2. The 24-hour storage stability test may be used. However, this test does not predict whether the 5-day settlement test will pass.
3. Perform the demulsibility test within 30 days from date of shipment.

4. The cement mixing test applies only if material is used in Asphalt Slurry Seal.
5. Slurry Seal containing CQS-1h must set sufficiently within 2 hours to allow traffic to resume.
6. In the Laboratory, Slurry Seal containing CQS-1h shall not set while being mixed according to GDT 91 for a minimum of 90 seconds.
7. Use ECR-1 in cold mix recycling of reclaimed pavements.

Table 1—Requirements for Cationic Emulsified Asphalt

Type	Rapid Setting				Medium Setting		Slow Setting		Cationic Quick Set			
Tests	CRS-2h		CRS-3		CMS-2		CSS-1h		CQS-1h (Note 5&6)		ECR-1 (Note 7)	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Test on emulsions												
Vis. Saybolt Furol at 77 °F(25 °C), sec.							20	100	20	150	50	500
Vis. Saybolt Furol at 122 °F (50 °C), sec.	100	400	100	500	50	450						
Storage stability test, (Note 2) 24 hours, percent		1		1		1		1		1		1
Settlement (Note 1) 5 days, percent		5		5		5		5		5		5
Demulsibility (Note 3) 35 ml, 0.8% dioctyl sodium sulfosuccinate, percent	40		40									
Coating Ability and Water Resistance:												
Coating, dry aggregate					Good							
Coating, after spraying					Fair							
Coating, wet aggregate					Fair						Good	
Coating, after spraying					Fair							
Particle charge test	Positive		Positive		Positive		Positive		Positive			
Sieve test, percent		0.10		0.10		0.10		0.10		0.10		0.10
Cement mixing test, percent (Note 4)								2.0				
Oil distillate by volume of emulsion, percent		3		3	4	12					0	6
Residue, percent	65		65		65		65		65		60	
Test on Residue from Distillation Test: Penetration, 77 °F (25 °C), 100 g, 5 sec., (dmm)	80	140	60	110	100	250	40	110	60	110	125	225
Ductility, 77 °F (25 °C), 5 cm/min., (cm)	40		40		40		40		40		40	
Solubility in trichloroethylene, per cent	97.5		97.5		97.5		97.5		97.5		97.5	